



Southam Road Retail Park, Banbury Flood Risk Assessment

Appendix D Correspondence & Other Data



Southam Road Retail Park, Banbury

Flood Risk Assessment



Sarah Kirby

From:

WT Enquiries [WTenquiries@environment-agency.gov.uk]

Sent:

21 December 2011 15:04

To:

Sarah Kirby

Subject:

RE: 26004 Southam Road Retail, Banbury - FRA data request

Attachments: Prod 4.pdf; 89 07 SD02 November 11.pdf

Our ref: WT/003293

Dear Sarah

Thank you for your enquiry.

Please find attached the product 4.

There are no formal defences in this area and nothing planned at present. Banbury FAS will not effect this

For an ordinary watercourse we request that a 5 metre buffer zone/maintenance strip be retained.

The Environment Agency cannot at this time provide any flood warning service for the area in question.

The area of Banbury at the confluence of the Birds Brook & River Cherwell (downstream of the area in question) is covered by a Flood Alert area, 061WAF14UChrwell - 'River Cherwell from Charwelton to just above Upper Heyford' and a Flood Warning area 061FWF14Banbury - 'River Cherwell at Banbury'.

The customer could, if they wish be registered to recieve Flood Alerts and Warnings for these areas. However, this would not cover the specific piece of land that they are enquiring about and would only provide them an appreciation for what is occuring locally in the River Cherwell catchment.

The lead time for issuing Flood Alerts and Warnings is a minimum of two hours, according to the Environment Agency's customer charter. However we would always endeavour to provide Alerts & Warnings at the earliest possible opportunity where we are confident in the evidence that we have.

Groundwater Levels and Flows

The site is situated on Charmouth Mudstone. These deposits are classed as unproductive strata. As such they are unlikely to hold much groundwater, so we have no information on groundwater levels or flow.

Groundwater Flooding

As the site lies on unproductive strata, groundwater flooding at the site is unlikely. Water logging would be possible following heavy or prolonged rainfall due to the low permeability geology, but this is not groundwater flooding.

Source Protection Zones

The site is not in a Source Protection Zone. More information on Source Protection Zones and their locations can be seen on our website by following links to 'What's In your Backyard > Groundwater'.

Yours sincerely

Dawn Cooper

External Relations Officer

West Thames Area

Environment Agency, Red Kite House, Howbery Park, Crowmarsh Gifford, Wallingford OX10 8BD

Tel: 01491 828352

email: wtenguiries@environment-agency.gov.uk

Heating and lighting buildings when they're half empty is a waste. Over the festive period this year, we'll be closing some of our offices and floors to save us money and energy. We'll be supporting our colleagues to work from alternative nearby locations.

Please help us to improve our service. Click on the link below to complete our Customer Survey – we use every piece of feedback we receive.

https://web.questback.com/isa/qbv.dll/SQ?q=8w2Qkfx%2BivsepdhrrlUf4oN%2BWx2h2wqtHwtHJZWNcAtnPq%3D%3D

From: Sarah Kirby [mailto:skirby@peterbrett.com]

Sent: 09 December 2011 14:30

To: WT Enquiries

Subject: 26004 Southam Road Retail, Banbury - FRA data request

Importance: High

Click here to report this email as spam.

FAO Jean Fulker - External Relations

Hi

Please find attached a data request for flood risk information for a site at Southam Road in Banbury. Please advise of the costs required to supply this data. I will be sending a hard copy in the post as well today.

Any queries please contact me on 0121 6332900

Thanks

Regards, Sarah Kirby Assistant Engineer For and on behalf of Peter Brett Associates LLP Waterloo House, Victoria Square, Birmingham, B2 5TB Tel: +44 (0)121 633 2900 Fax: +44 (0)121 633 2901

E-mail: skirby@peterbrett.com Website: www.peterbrett.com

Roger Tym & Partners and Baker Associates are now part of Peter Brett Associates LLP.

Peter Brett Associates LLP is a limited liability partnership registered in England and Wales. Registered number: OC334398. Roger Tym & Partners and Baker Associates are part of Peter Brett Associates LLP. A list of members is open to inspection at our registered office. Registered Office: Caversham Bridge House, Waterman Place, Reading, Berkshire, RG1 8DN, UK T: +44 (0)118 950 0761 F: +44 (0)118 959 7498. Brett Consulting Limited is wholly owned by Peter Brett Associates LLP, Registered number: 07765026. Registered address: as above.

Email is used as a convenient medium for rapid data transfer. Any contractual correspondence sent or received by email will not be held to be such unless and until it is received in writing by fax or letter. Likewise, file attachments must be treated as uncontrolled documents until issued as hard copy. This email and any files transmitted with it are confidential and may be legally privileged, and are intended solely for the use of the individual or entity to which they are addressed. If an addressing or transmission error has misdirected this email please notify the author by replying to this email and delete the email. If you are not the intended recipient you must not use or disclose, print or rely on this email. You are advised that you open any attachment at your own risk.

Any OS Data attached to this email is issued in accordance with Licence No. 100021575 under condition that it is used to plot once and not retained on the recipients computer system.

Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else.

We have checked this email and its attachments for viruses. But you should still check any attachment before opening it.

We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.

If we have sent you information and you wish to use it please read our terms and conditions which you can get by calling us on 08708 506 506. Find out more about the Environment Agency at $\underline{www.environment-agency.qov.uk}$

This message has been scanned for viruses by Websense



Product 4 (Detailed Flood Risk) for Southam Road, Banbury NGR 445196(E), 241434(W) Our Ref: 14_061_021_001

Product 4 is designed for developers where Flood Risk Standing Advice FRA (Flood Risk Assessment) Guidance Note 3 Applies.

i) "all applications in Flood Zone 3, other than non-domestic extensions less than 250 sq meters; and all domestic extensions",

ii) "all applications with a site area greater than 1 ha" in Flood Zone 2.

Product 4 includes the following information:

Ordnance Survey 1:25k colour raster base mapping;

Flood Zone 2 and Flood Zone 3;

Relevant model node locations and unique identifiers (for cross referencing to the water levels, depths and flows table);

Model extents showing defended scenarios;

FRA site boundary (where a suitable GIS layer is supplied);

Flood defence locations (where available/relevant) and unique identifiers; (supplied

Flood Map areas benefiting from defences (where available/relevant);

seperately)

Flood Map flood storage areas (where available/relevant);

Historic flood events outlines (where available/relevant, not the Historic Flood Map) and unique identifiers;

Statutory (Sealed) Main River (where available within map extents);

A table showing:

- i) model node X/Y coordinate locations, unique identifiers, and levels and flows for *defended* scenarios.
- ii) Flood defence locations unique identifiers and attributes; (supplied
 - iii) Historic flood events outlines unique identifiers and attributes; and
 - iv) local flood history data (where available/relevant).

Please note:

If you will be carrying out computer modelling as part of your Flood Risk Assessment, please read the enclosed guidance which sets out our requirements and best practice for computer river modelling.

This information is based on that currently available as of the date of this letter. You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements have been made. Should you recontact us after a period of time, please quote the above reference in order to help us deal with your query.

This information is provided subject to the enclosed notice which you should read.

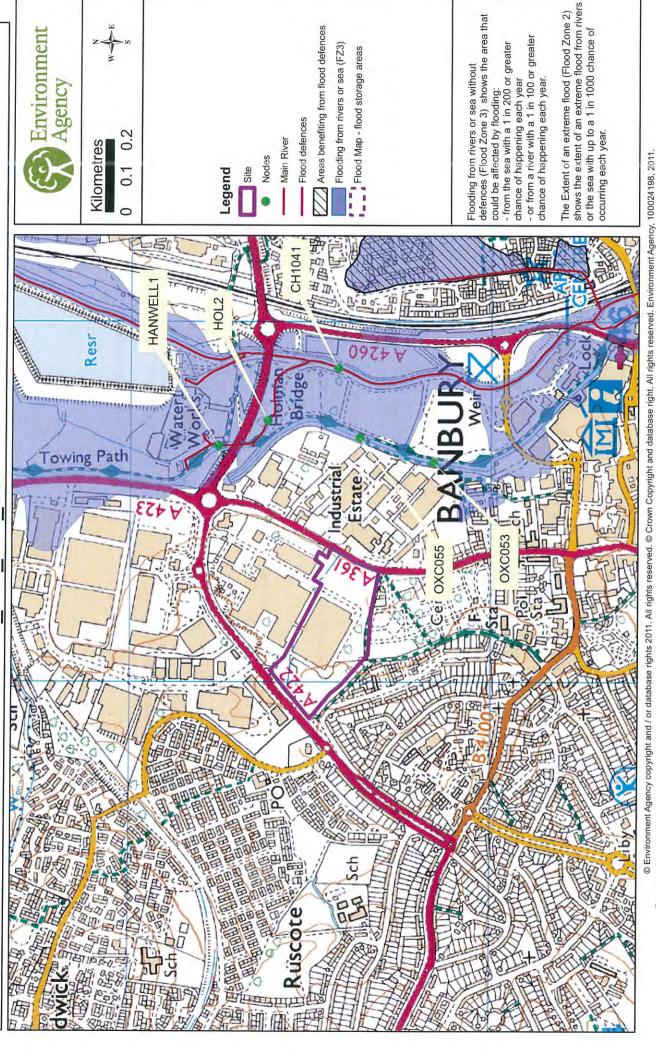
This letter is not a Flood Risk Assessment. The information supplied can be used to form part of your Flood Risk Assessment. Further advice and guidance

http://www.environment-agency.gov.uk/research/planning/82584.aspx

If you would like advice from us regarding your development proposals you can complete our pre application enquiry form which can be found at

http://www.environment-agency.gov.uk/research/planning/33580.aspx

Basic Flood Map centred on Southam Road, Banbury NGR 445196(E), 241434(W) 001 021 061 Created 16/December/2011 - REF: 14



Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk





Modelled in-channel flood flows and levels

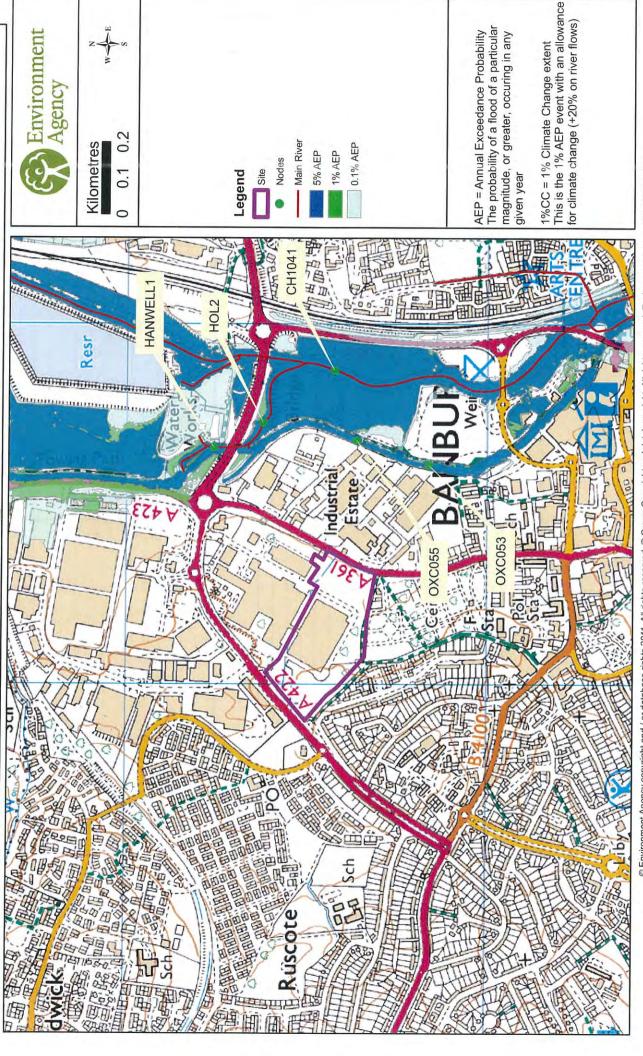
14_061_021_001

The modelled flood levels and flows for the closest most appropriate model node points for your site that are within the river channel are provided below:

Node laber Nod						Flood Levels (mAOD)	Is (mAOD)	
Cherwell (Banbury) 2011 445872 241425 90.82000 90.88000 n/a Cherwell (Banbury) 2011 445679 241364 92.06000 92.12000 n/a Cherwell (Banbury) 2011 445611 241163 92.05000 92.09000 n/a L Cherwell (Banbury) 2011 445728 241621 90.93000 91.00000 n/a L Cherwell (Banbury) 2011 445658 241758 91.25000 91.42000 n/a	Node label	Model	Easting	Northing	5% AEP	1% AEP	1% AEP with climate change allowance (+20% on river flows)	0.1% AEP
Cherwell (Banbury) 2011 445679 241364 92.06000 92.12000 n/a Cherwell (Banbury) 2011 445611 241163 92.05000 92.09000 n/a Cherwell (Banbury) 2011 445728 241621 90.93000 91.00000 n/a Cherwell (Banbury) 2011 445658 241758 91.25000 91.42000 n/a	041	Cherwell (Banbury) 2011	445872	241425	90.82000	90.88000	n/a	91.92000
Cherwell (Banbury) 2011 445611 241163 92.05000 92.09000 n/a Cherwell (Banbury) 2011 445728 241621 90.93000 91.00000 n/a Cherwell (Banbury) 2011 445658 241758 91.25000 91.42000 n/a	2055	Cherwell (Banbury) 2011	445679	241364	92.06000	92.12000		92.22000
Cherwell (Banbury) 2011 445728 241621 90.93000 91.00000 n/a 445658 241758 91.25000 91.42000 n/a	2053	Cherwell (Banbury) 2011	445611	241163	92.05000	92.09000		92.14000
Cherwell (Banbury) 2011 445658 241758 91.25000 91.42000 n/a	2	Cherwell (Banbury) 2011	445728	241621	90.93000	91.00000	n/a	91.93000
	IWELL	Cherwell (Banbury) 2011	445658	241758	91.25000	91.42000	n/a	92.50000

					Flood Flows (m3/s)	vs (m3/s)	
Node label	Model	Easting	Northing	5% AEP	1% AEP	1% AEP with climate change allowance (+20% on river flows)	0.1% AEP
CH1041	Cherwell (Banbury) 2011	445872	241425	27.29000	26.16000	n/a	36.75000
OXC055	Cherwell (Banbury) 2011	445679	241364	0.90000	1.80000	n/a	3.25000
OXC053	Cherwell (Banbury) 2011	445611	241163	0.89000	1.80000	n/a	3.22000
HOL2	Cherwell (Banbury) 2011	445728	241621	6.36000	7.68000	n/a	9.24000
HANWELL	Cherwell (Banbury) 2011	445658	241758	6.74000	8.94000	n/a	14.87000
						'n	

Detailed FRA Map centred on Southam Road, Banbury NGR 445196(E), 241434(W) 00 Created 16/December/2011 - REF: 14 061 021



Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk © Environment Agency copyright and / or database rights 2011. All rights reserved. © Crown Copyright and database right. All rights reserved. Environment Agency, 100024198, 2011.



14_061_021_001

Cherwell (Banbury) 201 Model:

Model information

The information provided is taken from the Cherwell (Banbury) Flood Study completed in February 2011. The study was carried out using ISIS TUFLOW 2D modelling software. Description:

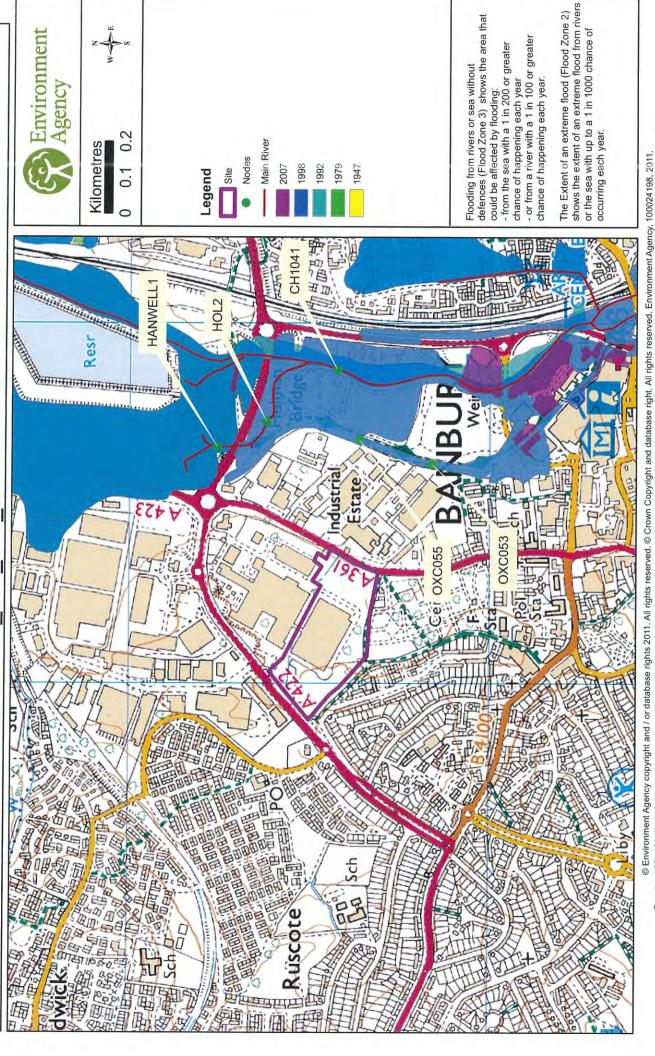
Model design runs - defended: 1 in 20 / 5%; 1 in 100 / 1% and 1 in 1000 / 0.1%

Model design runs – undefended: 1 in 20 / 5%; 1 in 100 / 1% and 1 in 1000 / 0.1%

Mapped outputs: 1 in 100 / 1% and 1 in 1000 / 0.1%

Model accuracy: Levels +/- 250mm

Historic Flood Map centred on Southam Road, Banbury NGR 445196(E), 241434(W) Created 16/December/2011 - REF: 14 061 021 001



Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk



14_061_021_001

Historic flood data

Our records show that the area of your site has been affected by flooding. Information on the floods that have affected your site is provided in the table below:

Flood Event Code	Flood Event Name	Start Date	End Date	Source of Flooding	Cause of Flooding
EA0619470300444	06MarchSpring1947	01/01/1947	12/12/1947 main river	main river	channel capacity exceeded (no raised defences)
EA0619790200400	06FebruaryWinter1979	01/01/1979	12/12/1979 main river	main river	channel capacity exceeded (no raised defences)
EA0619920900281	06SeptemberAutumn1992	01/01/1992	12/12/1992 main river	main river	channel capacity exceeded (no raised defences)
EA0619980400071	06AprilEaster1998	01/04/1998	30/04/1998 main river	main river	channel capacity exceeded (no raised defences)
ea061142598	Banbury CP_Fluvial Water	19/07/2007	29/07/2007 main river	main river	channel capacity exceeded (no raised defences)
eaub 1142596	Banbury CP Fluvial Water	19/07/2007	29/07/2007	main river	channel capacity exceeded (no raised defe

Please note the Environment Agency maps flooding to land not individual properties. Floodplain extents are an indication of the geographical extent of a historic flood. They do not provide information regarding levels of individual properties, nor do they imply that a property has flooded internally.

Standard notice [not for use with Special Data, Personal Data or unlicensed 3rd party rights]



Information warning

We (The Environment Agency) do not promise that the Information supplied to You will always be accurate, free from viruses and other malicious or damaging code (if electronic), complete or up to date or that the Information will provide any particular facilities or functions or be suitable for any particular purpose. You must ensure that the Information meets your needs and are entirely responsible for the consequences of using the Information. Please also note any specific information warning or guidance supplied to you.

Permitted use

- The Information is protected by intellectual property rights and whilst you have certain statutory rights
 which include the right to read the Information, you are granted no additional use rights whatsoever
 unless you agree to the licence set out below.
- Commercial use of anything except EA OpenData is subject to payment of a £50 licence fee (+VAT) for each person seeking the benefit of the licence, except for use as an Environment Agency contractor or for approved media use.
- To activate this licence you do not need to contact us (unless you need to pay us a Commercial licence fee) but if you make any use in excess of your statutory rights you are deemed to accept the terms below.

Licence

We grant you a worldwide, royalty-free (apart from the £50 licence fee for commercial use), perpetual, non-exclusive licence to use the Information subject to the conditions below.

You are free to:



copy, publish, distribute and transmit the Information



adapt the Information



exploit the Information commercially, for example, by combining it with other Information, or by including it in your own product or application

You must (where you do any of the above):



acknowledge the source of the Information by including the following attribution statement: "Contains Environment Agency information © Environment Agency and database right"



ensure that you do not use the Information in a way that suggests any official status or that We endorse you or your use of the Information



ensure that you do not mislead others or misrepresent the Information or its source or use the Information in a way that is detrimental to the environment, including the risk of reduced future enhancement



ensure that your use of the Information does not breach the Data Protection Act 1998 or the Privacy and Electronic Communications (EC Directive) Regulations 2003

These are important conditions and if you fail to comply with them the rights granted to you under this licence, or any similar licence granted by us will end automatically.

No warranty

The Information is licensed 'as is' and We exclude all representations, warranties, obligations and liabilities in relation to the Information to the maximum extent permitted by law. We are not liable for any errors or omissions in the Information and shall not be liable for any loss, injury or damage of any kind caused by its use. We do not guarantee the continued supply of the Information.

Governing Law

This licence is governed by the laws of England and Wales.

Definitions

"Information" means the information that is protected by copyright or by database right (for example, literary and artistic works, content, data and source code) offered for use under the terms of this licence.

"Commercial" means:

- offering a product or service containing the Information, or any adaptation of it, for a charge, or
- internal use for any purpose, or offering a product or service based on the Information for indirect commercial advantage, by an organisation that is primarily engaged in trade, commerce or a profession.

Contact: enquiries@environment-agency.gov.uk

03708 506506

Sarah Kirby

From: Hunt, Gordon - Environment & Economy - Highways & Transport

[Gordon.Hunt@Oxfordshire.gov.uk]

Sent: 03 January 2012 16:20

To: Sarah Kirby

Subject: RE: Proposed retail redevelopment at Southam Road, Banbury - request for info to support FRA

Hi Sarah

Sorry for the delay in replying.

The culvert across ruscote ave. is owned by Thames Water
 The ditch and culvert system through kraft works is owned and maintained by Kraft

Where it leaves Kraft it reverts to the ownership of Thames Water

- 2. I know of two flooding incidents in July 2006 on Ruscote Ave., both caused by a bad joint under the road and the right angled bend in Kraft
- 3. we relayed the pipework, as far as I know no works were undertaken in the Kraft site.
- 4. A careful check of the system through the Kraft site should be undertaken as the sizes of the structures varies through the system as I remember
- The stream through Kraft takes water from as far as highlands R/A on the Warwick rd (a large catchment)
- 6. in this area this is the only outlet
- 7. The County Council intends to forfill its role as Local Lead Flood Authority
- 8. There will be no problem adopting Suds under the Act

Regards Gordon Hunt County Drainage Engineer

From: Sarah Kirby [mailto:skirby@peterbrett.com]

Sent: 03 January 2012 14:45

To: Hunt, Gordon - Environment & Economy - Highways & Transport

Subject: FW: Proposed retail redevelopment at Southam Road, Banbury - request for info to support

FRA

Hi

Happy New Year

Have you had a chance to look at our request for flood risk and drainage information?

Any information/guidance would be greatly appreciated

Thanks

Regards,
Sarah Kirby
Assistant Engineer
For and on behalf of Peter Brett Associates LLP
Waterloo House, Victoria Square, Birmingham, B2 5TB
Tel: +44 (0)121 633 2900
Fax: +44 (0)121 633 2901
E-mail: skirby@peterbrett.com
Website: www.peterbrett.com

Roger Tym & Partners and Baker Associates are now part of Peter Brett Associates LLP.

From: Sarah Kirby

Sent: 09 December 2011 15:17 **To:** 'qordon.hunt@oxfordshire.qov.uk'

Subject: Proposed retail redevelopment at Southam Road, Banbury - request for info to support FRA

Hi

We are currently preparing a FRA to support a planning application for retail development on part of the existing Kraft site at Southam Road in Banbury. I understand that Oxfordshire County Council has taken on the role of Lead Local Flood Authority for this area.

I attach a data request for flood risk and drainage information and a site location plan.

Any information you can provide would be greatly appreciated.

Regards,
Sarah Kirby
Assistant Engineer
For and on behalf of Peter Brett Associates LLP
Waterloo House, Victoria Square, Birmingham, B2 5TB
Tel: +44 (0)121 633 2900
Fax: +44 (0)121 633 2901
E-mail: skirby@peterbrett.com
Website: www.peterbrett.com

Roger Tym & Partners and Baker Associates are now part of Peter Brett Associates LLP.

Peter Brett Associates LLP is a limited liability partnership registered in England and Wales. Registered number: OC334398. Roger Tym & Partners and Baker Associates are part of Peter Brett Associates LLP. A list of members is open to inspection at our registered office. Registered Office: Caversham Bridge House. Waterman Place, Reading, Berkshire, RG1 8DN. UK T: +44 (0)118 950 0761 F; +44 (0)118 959 7498. Brett Consulting Limited is wholly owned by Peter Brett Associates LLP. Registered number: 07765026. Registered address: as above. Email is used as a convenient medium for rapid data transfer. Any contractual correspondence sent or received by email will not be held to be such unless and until it is received in writing by fax or letter. Likewise, file attachments must be treated as uncontrolled documents until issued as hard copy. This email and any files transmitted with it are confidential and may be legally privileged, and are intended solely for the use of the individual or entity to which they are addressed. If an addressing or transmission error has misdirected this email please notify the author by replying to this email and delete the email. If you are not the intended recipient you must not use or disclose, print or rely on this email. You are advised that you open any attachment at your own risk.

Any OS Data attached to this email is issued in accordance with Licence No. 100021575 under condition that it is used to plot once and not retained on the recipients computer system.

This email, including attachments, may contain confidential information. If you have received it in error, please notify the sender by reply and delete it immediately. Views expressed by the sender may not be those of Oxfordshire County Council. Council emails are subject to the Freedom of Information Act 2000. http://www.oxfordshire.gov.uk/emaildisclaimer

This message has been scanned for viruses by Websense

Public Protection & Development Management

Andy Preston - Head of Public Protection & Development Management



NORTH OXFORDSHIRE

Peter Brett Associates LLP 3rd Floor Waterloo House Victoria Square Birmingham B2 5TB Bodicote House Bodicote Banbury Oxfordshire OX15 4AA

www.cherwell.gov.uk

Please ask for:

Stephanie Betts

Email:

Stephanie.betts

Direct Dial:

26004 BIR Drainage

Our Ref:

PL5/3

23 December 2011

Dear Sirs

Re: Flood Risk Assessment - Land off Southam Road Banbury

I write with reference to your letter dated 9 December 2011 received in this office on 12 December 2011.

The District Council no longer has a team dedicated to dealing with drainage matters. This area of responsibility is now dealt with by staff at the County Council.

I note that your letter states that you have already contacted the County Council direct regarding the information that you seek.

Yours faithfully

Stephanie Betts Planning Administration



Carmen Hervas Brett Consulting Ltd 11 Prospect Court Courteenhall Road BLISWORTH NN7 3DG

Search address supplied

Land At Banbury 445131 241459 Ruscote Avenue and Southam Road Banbury

Your reference

26004

Our reference

ALS/ALS Standard/2011_2136537

Search date

16 December 2011

You are now able to order your Asset Location Search requests online by visiting www.thameswater-propertysearches.co.uk Thames Water Utilities Ltd

Property Searches PO Box 3189 Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504

F 0118 923 6655/57 E searches@thameswater.co.uk

www.thameswaterpropertysearches.co.uk



Search address supplied: Land At Banbury 445131 241459, Ruscote Avenue and Southam Road, Banbury,

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

This search provides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0118 925 1504, or use the address below:

Thames Water Utilities Ltd Property Searches PO Box 3189 Slough SL1 4WW

Fax: 0118 923 6657

Tel: 0118 925 1504

Email: searches@thameswater.co.uk

Web: www.thameswater-propertysearches.co.uk

Thames Water Utilities Ltd

Property Searches PO Box 3189 Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504 F 0118 923 6655/57

E searches@thameswater.co.uk
I www.thameswaterpropertysearches.co.uk



Waste Water Services

Please provide a copy extract from the public sewer map.

The following quartiles have been printed as they fall within Thames' sewerage area:

SP4441SE SP4541SW SP4441NE SP4541NW

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract
 of the public sewer map as being subject to an agreement under
 Section 104 of the Water Industry Act 1991 are not an 'as constructed'
 record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

The following quartiles have been printed as they fall within Thames' water

Thames Water Utilities Ltd

Property Searches PO Box 3189 Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504

F 0118 923 6655/57

E searches@thameswater.co.uk
www.thameswaterpropertysearches.co.uk



area:

SP4441SE SP4541SW SP4441NE SP4541NW

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0845 920 0800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

An invoice is enclosed. Please send remittance to Thames Water Utilities Ltd., PO Box 223, Swindon, SN38 2TW.

Thames Water Utilities Ltd

Property Searches PO Box 3189 Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504 F 0118 923 6655/57

E searches@thameswater.co.uk

I www.thameswaterpropertysearches.co.uk



Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

> Developer Services (Waste Water) Thames Water Clear Water Court Vastern Road Reading RG1 8DB

Tel:

0845 850 2777

Fax:

0118 923 6613

Email: developer.services@thameswater.co.uk

Should you require any further information regarding budget estimates, diversions or stopping up notices then please contact:

> DevCon Team Asset Investment **Thames Water** Maple Lodge STW Denham Way Rickmansworth Hertfordshire WD3 9SQ

Tel:

01923 898 072

Fax:

01923 898 106

Email: devcon.team@thameswater.co.uk

Thames Water Utilities Ltd

Property Searches PO Box 3189 Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504

F 0118 923 6655/57

E searches@thameswater.co.uk

www.thameswater-propertysearches.co.uk



Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact our Kew Service Desk by writing to:

Clean Water Design Thames Water Utilities 1 Kew Bridge Road Brentford Middlesex TW8 0EF

Tel: 0845 850 2777 Fax: 0208 213 8833

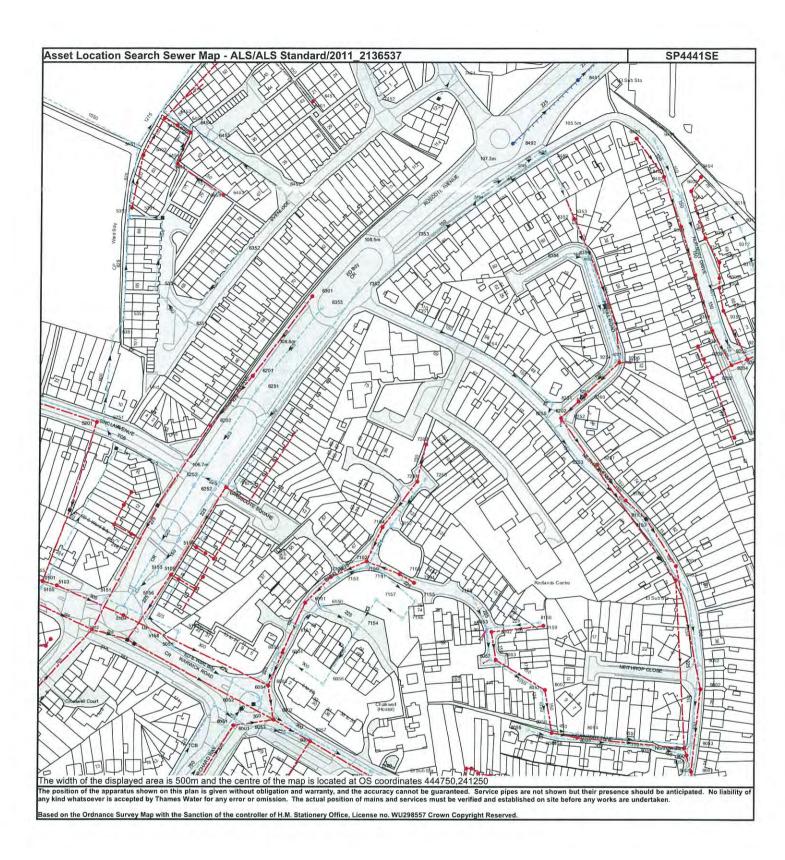
Email: developer.services@thameswater.co.uk

Thames Water Utilities Ltd

Property Searches PO Box 3189 Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504 F 0118 923 6655/57 E searches@thameswater.co.uk I www.thameswaterpropertysearches.co.uk

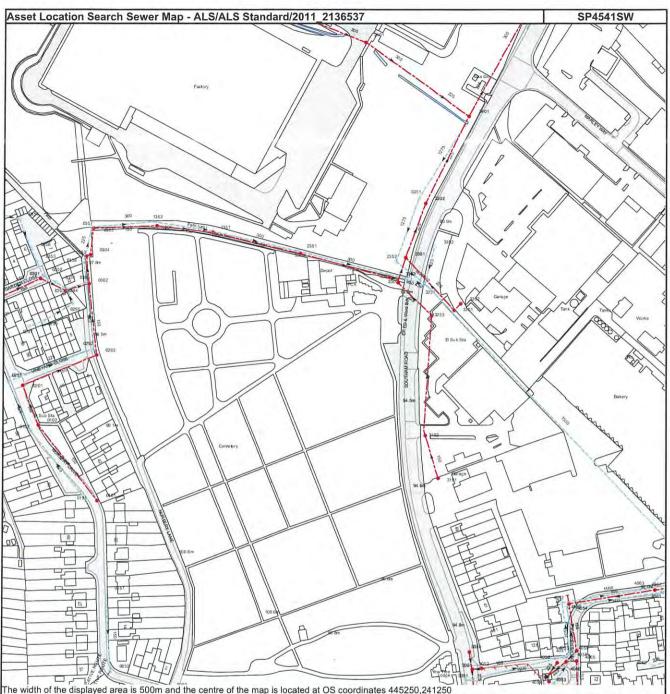


Manhole Reference	Manhole Cover Level	Manhole Invert Level
9308 9304	101.42 101.52	100.41
9309	101.52	100.71 100.76
9313	n/a	n/a
9305	101.56	100.86
9312	n/a	n/a
9311 9310	n/a n/a	n/a
9201	102.71	n/a 102.18
9202	102.72	101.38
9204	101.69	99.89
9252	101.72	99.53
9205 9251	101.46 101.43	99.43 99.19
303	101.94	100.17
351	102.25	100.64
352	101.82	99.8
9001	99.67	97.99
9051 9055	99.92 n/a	98.63 n/a
0003	100.41	98.66
054	n/a	n/a
053	100.26	98.75
002	101.83	100.36
052 153	102.6 105.34	101.67
103	105.34	104.28 103.96
101	105.99	104.41
152	107.19	105.43
151	107.43	105.34
9203	102.5	101.64
307 302	102.57 102.08	101.75
353	102.08	100.7
306	101.91	101.11
301	102.36	101.08
453	102.78	101
403 452	102.51	101.7
404	103.14 102.51	102.4 101.97
402	103.01	101.58
451	103.66	102.03
401	104.23	102.4
259	108.25	103.66
054 258	n/a 107.98	n/a 103.7
253	109.15	103.7
356	105.68	103.89
260	n/a	n/a
351	105.72	104.74
201 254	108.59 106.66	105.16
206	106.68	103.73 104.06
253	106.58	104.97
102	107.84	105.06
492	n/a	n/a
495 055	106.71	105.26
196	n/a 106.26	n/a 105.22
160	n/a	n/a
051	102.93	100.48
159	n/a	n/a
255	109.84	108.29
002 152	102.91 106.12	100.16 105.19
050	102.05	100.06
001	102.06	99.99
251	109.71	108.47
956	n/a	n/a
202 354	109.21	103.39
252	106.56 106.34	105.52 104.8
52	n/a	n/a
53	111.01	110.12
51	103.67	101.14
05 53	n/a	n/a
53 52	106.02 104.34	103.7 101
02	105.95	101
03	104.19	100.48
60	n/a	n/a
51	n/a	n/a
59	n/a	n/a
58 54	106.61 110.99	104.15
94	107.72	109.4 105.34
51	104.41	102.93
54	105.28	102.86
52	110.21	107.5
02	109.89	107.22

Manhole Reference	Manhole Cover Level	Manhole Invert Level
7157 7452	n/a 104.58	n/a 103
104	110.63	108.61
151	109.8	107.77
152 103	110.68	109
156	n/a	n/a
351	111.04	110.16
101 155	109.42 n/a	107.56 n/a
201	111.11	109.04
353	109.28	108.23
250 202	111.1	109.15
050	99.79	n/a
055	104.46	102.02
452	105.37	103.72
151 101	106.25 107.73	105.07 106.03
451	103.41	102.41
301	108.9	106.88
401 353	103.21 109.6	101.85 107.84
150	107.79	107.64
105	109.24	106.94
153	109.38	108.39
003 002	103.16 102.43	100.77
004	104.52	101.47
6057	101.22	n/a
005 056	101.1 104.15	n/a 102.16
403	102.2	100.37
404	102.56	100.88
197	n/a	n/a
154 152	105.76	104.27
453	102.26	100.83
252	106.97	105.7
351 454	104.53	102.58
454 402	102.54 102.62	101.04 100.71
252	107.63	106.19
155	n/a	n/a
154 156	n/a n/a	n/a n/a
153	n/a	n/a
453	102.71	101.33
202	107.68	104.19
152 455	n/a 103.85	n/a 102.05
403	103.85	101.76
203	108.36	106.26
253 352	108.63 105.08	106.89
201	108.51	103.6 106.35
251	109.32	107.53
052	103.24	101.46
051 001	103.44	99.88 100.43
053	102.8	100.43
054	102.38	101.22
102	104.91	103.53
201 251	105.05 105.11	104.36 103.09
51	105.11	103.93
95	n/a	n/a
94 04	n/a 104.81	n/a 101.34
93	n/a	n/a
96	n/a	n/a
56	105.13	104.16
58 53	104.28 105.05	n/a 103.77
05	105.04	103.77
51	103.71	102.66
55 01	105.5	104.23
01 93	105.47 n/a	102.67 n/a
94	n/a	n/a
03	105.37	102.4
51	103.43	101.64
52 53	103.42 103.1	100.82 100.15
01	103.08	100.15
51	102.32	99.49
02	102.32	100.32
54 54	103.95 102.59	102.09 101.23
101	102.59	100.05
52	102.18	100.73

Manhole Reference	Manhole Cover Level	Manhole Invert Level

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 445250,241250

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. WU298557 Crown Copyright Reserved.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
4061	n/a	n/a
4067	92.15	90.19
4063	91.03	n/a
4062	92	91
4065	92.57	n/a
4058	92.6	90.71
4059	92.55	89.43
3051	94.71	90.46
3053	n/a	n/a
3001	94.63	93.42
3052 4057	94.33	93.58
1953	93.43 93.32	92.1
1056	92.72	90.82 89.44
1052	92.34	90.66
1051	92.77	90.11
1066	92.7	89.34
1054	92.56	90.57
1060	n/a	89.86
1053	92.72	90.1
1101	94.39	91.81
3102	n/a	n/a
253	n/a	n/a
3201	93.41	91.14
3202	93.27	91.15
3251	93.89	90.1
2303	94.07	90.7
353	94.17	92.71
302	93.93	92.5
352	94.45	91.1
3301	94.47	90.56
052	100.72	98.85
051	101	99.83
101	101.26	99.97
151	101.22	100.14
152	101.49	99.94
1102	101.44	99.1
201	101.09	98.74
251	101.17	99.62
301	94.23	93.08
351	94.48	93.56
356	99.17	98.49
302	95.52	93.66
351	95.55	94.31
305	97.51	95.85
357	97.5	96.27
301	96.68	94.87
352	n/a	n/a
354	99.09	98.61
202	98.31	97.2
252	98.37	97.5
297	n/a	n/a
296	n/a	n/a
295	n/a	n/a
203	98.53	97.17
294	n/a	n/a
302	97.77	96.53
351	98.93	97.29
355	97.77	96.75
301	99.31	97.85
352	99.21	97.71
353	99.12	97.97
358	n/a	n/a
303	97.58	96.18
304	97.52	96.01
352	93.99	93.16
302	95.03	90.43
351	95.15	91.77
401	94.57	89.69
401	95.85	90.83

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.



Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. WU298557 Crown Copyright Reserved.

Manhole Reference	Manhole Cover Level	Manhole Invert Level
9503 9554	100.35	95.54 95.39
3501	101.85	96.62
550	103.42	96.58
651	100.24	98.87
607 703	100.58 102.11	98.67 100.07
754	102.14	100.07
704	102.68	100.45
753	102.73	101.03
752	103.17	101.47
851 801	103.49 103.59	101.22 100.91
805	104.67	102.98
808	104.63	102.96
804	105	103.15
806	104.26	102.59
807 853	104.51 104.67	102.9 102.86
951	107.84	105.69
952	106.73	104.9
751	102.75	100.56
752	103.72	101.2
701	103.62	101.18
850 801	104.38 104.28	101.77 101.76
801 951	104.28	99.14
901	102.16	99.46
651	100.71	99.24
701	101.65	99.22
752	101.6	99.58
751 755	102.77	100.79
755 852	102.35 104.45	101.6 101.91
801	104.39	102.13
802	104.39	101.49
852	104.41	101.56
953	103.93	102.81
952 951	104.29	102.99 103.29
551	104.82	95.46
551	99.82	95.42
504	100.41	95.74
502	98.53	94.97
504	99.79	95.19
502 503	101.31 100.62	95.74 95.92
753	104.68	101.91
851	104.62	103
851	104.24	101.99
852	103.78	102.32
954	103.75	102.8
552 503	101.2 101.48	99.83 98.35
555	101.22	99.43
501	100.72	98.06
557	100.61	99.12
553	100.99	98.68
557	100.9	98.58
559 558	n/a 100.69	98.12 98.3
552	100.94	99.85
601	101.63	99.64
702	101.95	99.97
51	102.25	101.59
701 751	103.67	100.9 102.65
751 701	103.98 104.51	102.65
03	104.86	103.42
55	105.54	104.45
54	105.54	104.16
02	107.64	105.4
53	109.85	108.21
51 54	101.93 103.42	100.11 96.65
55	100.65	99.17
02	100.45	97.65
553	100.9	97.64
56	100.62	98.77
03	100.54	97.1
05	100.68	97.39
506 553	100.24	97.59
05	100.2 100.31	98.45 97.92
04	100.6	98.69
52	100.38	98.59
03	100.77	99.17
02	100.89	99.34
01 53	97.89	95.44
	98.11	96.55

Manhole Reference	Manhole Cover Level	Manhole Invert Level
6556	102.06	100.62
6501	101.83	99.58
6502	101.72	98.93
5551	101.7	99.94
5504	101.77	99.27
5552	100.81	99.01
6505	101.14	98.78
5554	101.68	100.36
6601	101.58	100.04
5654	106.58	105.5
6651	102.63	101.29
5602	103.87	101.74
5752	103.01	101.68
6753	104.29	102.57
5856	108.89	107.11
8801	108.99	106.85
5910	113.3	110.86
956	113.34	110.98
952	111.36	109.39
5959	117.47	111.62
951	118.12	112.47
901	118.93	116.1
901	123.01	121.01
951	122.9	121.25
903	123.72	121.19
953	123.73	121.87
952	121.26	118.44
5904	121.73	120.08
954	121.65	119.69
5905	119.81	117.24
955	119.35	115.92
962	121.18	119.03
803	115.69	111.94
902	121.45	118.55
853	115.29	112.15
909	120.69	116.59
908	119.52	115.85
961	119.31	116.23
906	117.28	113.28
958	117.02	111.31
960	117.6	114.14
957	114.36	111.16
907	117.54	114.36
753	105	103.29
751	108.5	107.01
	1 1 2 7 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1	
752	107.55	105.27
854	113.44	112.37
801	116.49	113.11
851	116.46	113
855	112.71	111.21
852	119.34	116.04
802	119.3	116.79
651	105.96	104.48
7.5-2	14.7.7.6.1.4.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7	1-1/2/2017 7
653	104.02	102.5
652	104.57	103.27
551	102.8	101.55
601	104.08	101.78
501	103	100.56

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.



Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. WU298557 Crown Copyright Reserved.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level	
0701	102.44	100.55	
1752	102.43	100.37	
1753	101.52	99.34	
2501	96.93	91.58	
1501	96.79	92.39	
0501	97.04	93.23	
0602	99.03	97.18	
0652	99.04	97.49	
0651	100.65	98.86	
0601	100.78	98.61	
1751	102.73	101.35	
3501	94.07	89.35	
4501	93.98	88.96	
4502	93.74	88.42	
4754	93.01	91.91	
4753	93.76	91.92	
4794	n/a	n/a	
4752	93.99	91.84	
4751	93.67	91.14	
3891	99.18	96.23	
491A	n/a	n/a	
491B	n/a	n/a	
2850	n/a	n/a	
· 1	1	13000	
391A	n/a	n/a	

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.



Public Sewer Types (Operated & Maintained by Thames Water)

Foul: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

þ

Combined: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works. -Trunk Surface Water 0

Trunk Foul

Vent Column Meter M 0 Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

Control Valve Drop Pipe Ancillary ÷ [[[]]

Bio-solids (Sludge)

Vent Pipe

Trunk Combined

Storm Relief

Proposed Thames Water Foul Sewer

End Items

Foul Rising Main

Proposed Thames Surface

Water Sewer

Gallery

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol, Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

Undefined End Outfall)

Proposed Thames Water Rising Main

444

Sludge Rising Main

Vacuum

Combined Rising Main

Rising

Water

Surface

Inlet 6

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Searches on 0118 925 1504.

Other Symbols

Symbols used on maps which do not fall under other general categories

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

Dam Chase

Fitting

Air Valve

Sewer Fittings

Public/Private Pumping Station 4/4

Change of characteristic indicator (C.O.C.I.) *

Invert Level Ø

Summit V

Areas

Lines denoting areas of underground surveys, etc.

Agreement

Operational Site

Tunnel 111

Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

Surface Water Sewer Gulley --* ON Culverted Watercourse Combined Sewer Foul Sewer

Abandoned Sewer

Notes:

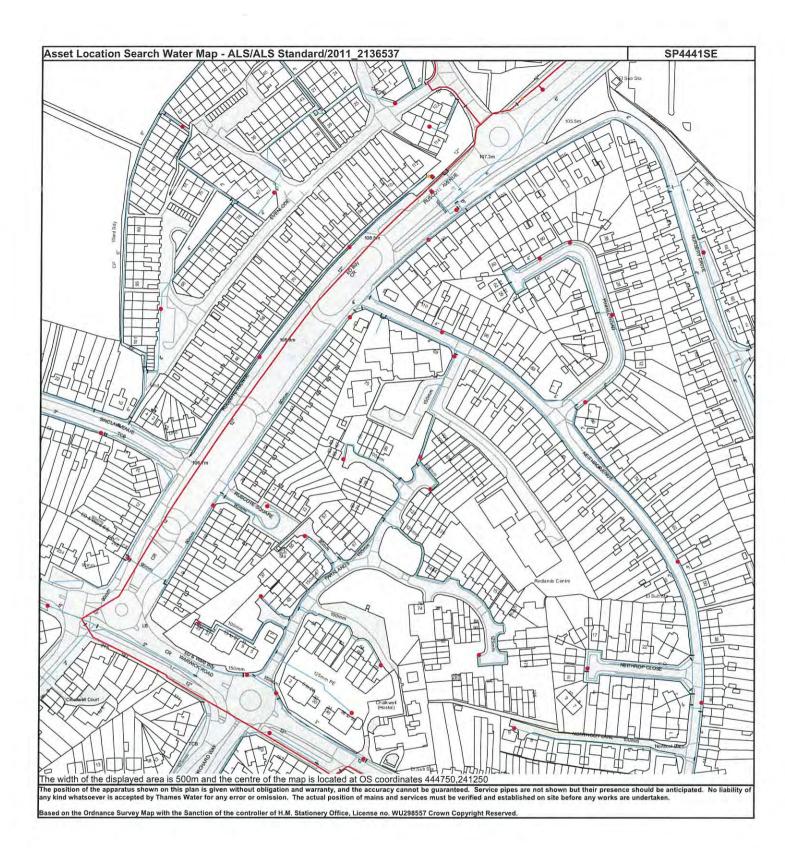
1) All levels associated with the plans are to Ordnance Datum Newlyn.

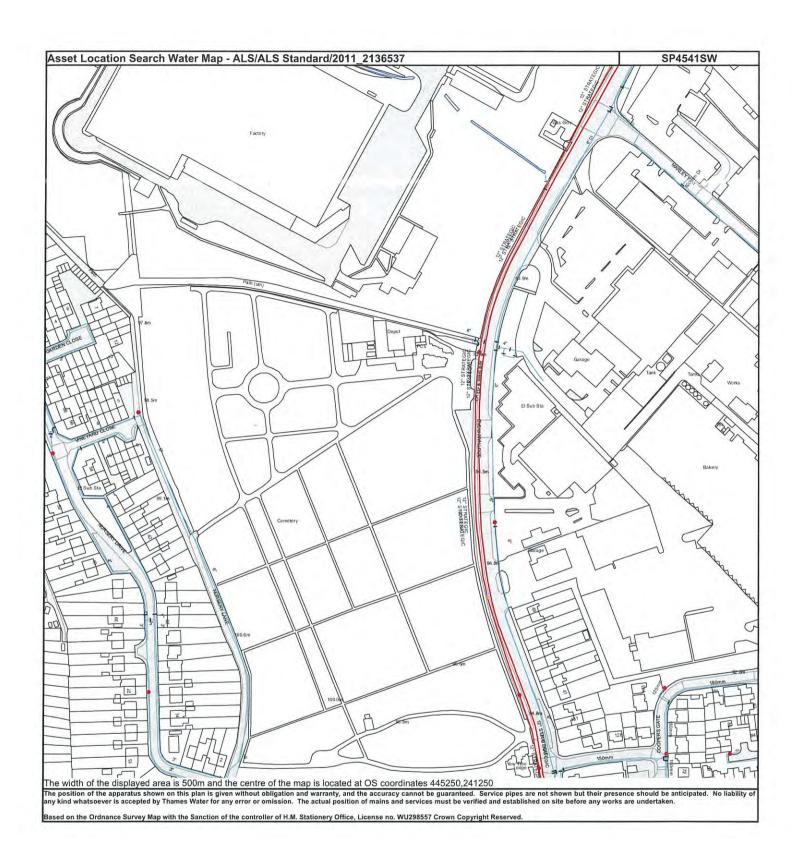
2) All measurements on the plans are metric.

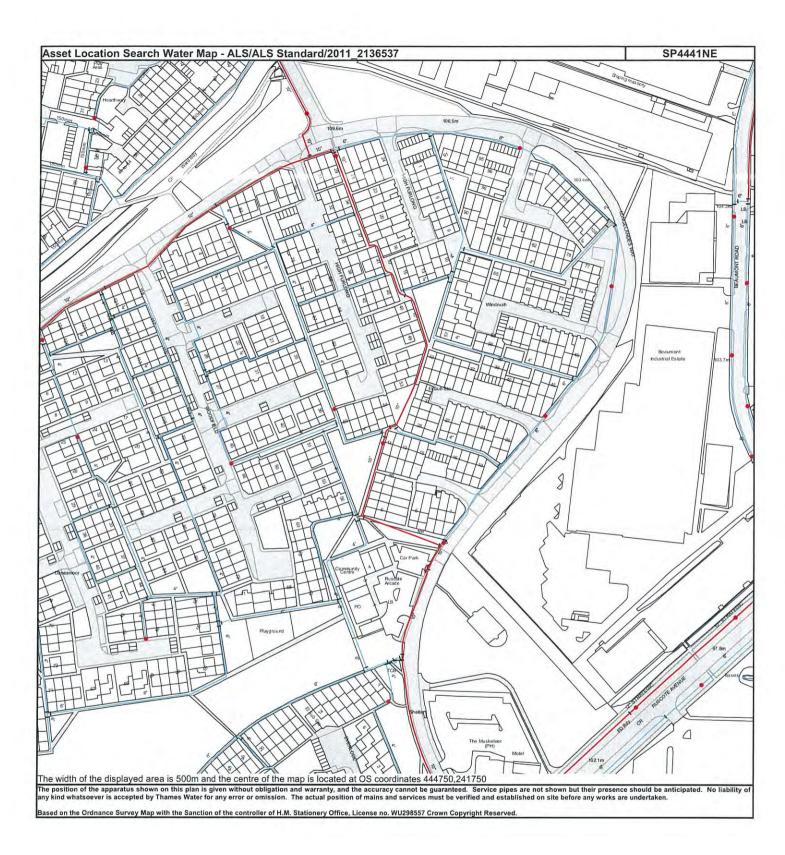
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of

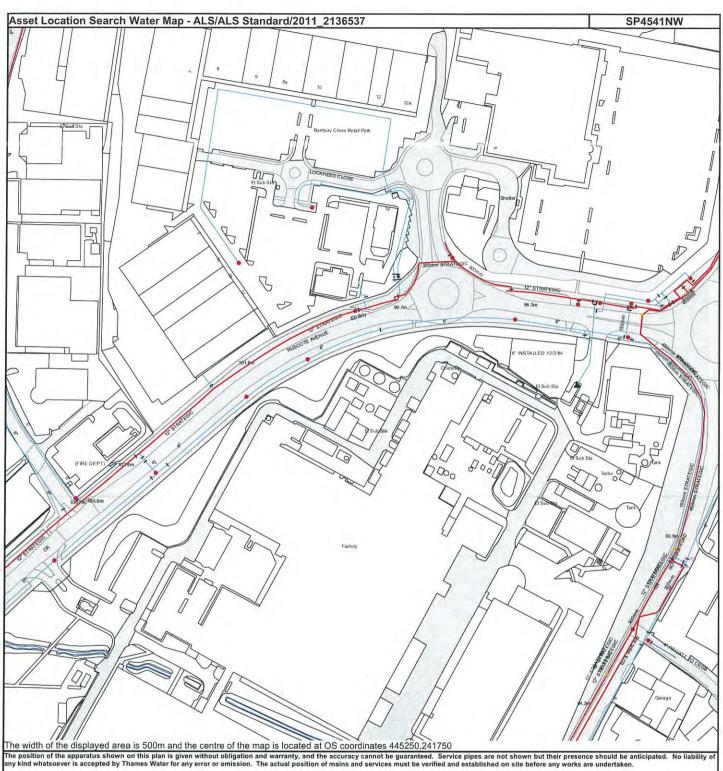
4) Most private pipes are not shown on our plans, as in the past, this information has

na' or '0' on a manhole level indicates that data is unavailable.









Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. WU298557 Crown Copyright Reserved.



ALS Water Map Key

Water Pipes (Operated & Maintained by Thames Water)

- With few exceptions, domestic connections are only made to Distribution Main: The most common pipe shown on water maps. distribution mains.
- Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

..91

- Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties 3. SUPPLY
- Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe. 3. FIRE
- Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown. 3" METERED
- fransmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.
- Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

DEPTH BELOW GROUND

PIPE DIAMETER Up to 300mm (12") 1100mm (3'8")

900mm (3°)

1200mm (4")

600mm and bigger (24" plus)

300min - 600mm (12" - 24")

General PurposeValve Pressure ControlValve CustomerValve Air Valve Valves ×

Hydrants

e Hydrant
Singl
Ī

Meters



Meter

End Items

Symbol indicating what happens at the end of a water main.

Blank Flange	Capped End	Emptying Pit
Ī	T	C

Undefined End Manifold 0

Customer Supply

Fire Supply

Operational Sites

Booster Station	Other	Other (Proposed)	
Φ	•	•	

Reservoir Pumping Station

ce	
Serv	
1	
4	(
I	

Treatment Works Shaft Inspection 0

UNKHOWN	Water Tower
•	B

Other Symbols

Data Logger 1

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them. **Private Main:** Indiates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

- 1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
- 2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
- 3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
- Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
- 5. In case of dispute TWUL's terms and conditions shall apply.
- Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'
- 7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
- 8. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0845 9200 800.

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to him at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to WaterVoice Thames on 0845 758 1658 (it will cost you the same as a local call) or write to them at 4th Floor (South), High Holborn House, 52-54 High Holborn, London WC1V 6RL.

Ways to pay your bill

	y Post - Cheque only, made
p	ayable to 'Thames Water
U	tilities Ltd' writing your
T	hames Water account number
01	n the back. Please fill in the
pa	ayment slip below and send it
	ith your cheque to Thames
W	/ater Utilities Ltd., PO Box
	23, Swindon SN38 2TW
2	

By BACS Payment direct to our bank on account number 90478703, sort code 60-00-01 may be made. A remittance advice must be sent to Thames Water Utilities Ltd., PO Box 223, Swindon SN38 2TW. Or fax to 01793 424599 or email: cashoperations@thameswater.co.uk

Telephone Banking By calling your bank and quoting your invoice number and the Thames Water's bank account number 90478703 and sort code 60-00-01 By Swift Transfer You may make your payment via SWIFT by quoting NWBKGB2L together with our bank account number 90478703, sort code 60-00-01 and invoice number

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd. Reading, Berks, RG1 8DB,

Southam Road Retail Park, Banbury Flood Risk Assessment

Appendix E Surface Water Assessment



Southam Road Retail Park, Banbury

Flood Risk Assessment



26004 South Road Banbury Flood Risk Assessment Surface Water Drainage Assessment Date 21/02/2012

Prepared By ET Reviewed By BU

Existing Catchments

	Catchment 1	Catchment 2	Catchment 3	Catchment 4	Catchment 5	Total Area
Area	0.079	0.066	2.11	0.321	0.628	3.204

Proposed Development

Impermeable area proposed site 4.35 ha
Roof area and service yards 2.35 ha
Car park 2 ha

Proposed Drainage Strategy

Proposed total impermeable area	4.35 ha
Proposed impermeable area to drain to watercourse unattenuated	3.20 ha
Residual proposed impermeable area to be drained at Greenfield runoff rate	1.15 ha

Greenfield Runoff Rates

Greenfield runoff rate calculated using ICP SuDS method



Summary of Greenfield Runoff Rates

Qbar	4 l/s/ha
Q1	3.4 l/s/ha
Q30	9.1 l/s/ha
Q100	12.8 l/s/ha

Allowable discharge rate calculated for 1.15ha:

 Qbar
 4.60 l/s

 Q1
 3.91 l/s

 Q30
 10.47 l/s

 Q100
 14.72 l/s

Qbar and Q 1 rates area too low to effectively control, therefore increase limiting discharge rate to 5l/s

Quick Storage Estimates

Design Paramaters:

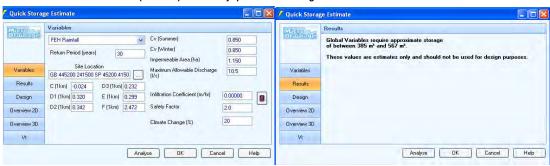
 Rainfall Data
 FEH

 Climate Change
 20%

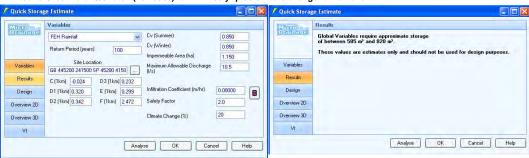
 Cv
 0.85

 Design Return Period
 100 Years

Limited to Greenfield Q30 rate - (10.465l/s) for 1 in 30 yr plus climate change rainfall event



Limited to Greenfield Q30 rate - (10.465l/s) for 1 in 100 yr plus climate change rainfall event



Summary of Results

Limiting to Q30 385 to 567 m3 Average Volume 476 m3 Limiting to Q100 585 to 820 m3 Average Volume 702.5 m3

Storage Design

The volume of underground storage required to be sized for events up to the 1 in 30 yr plus climate change storm event limited to the Q30 discharge rate Therefore below ground storage tank to be sized to provided approximately 476 m3

Using Geocelluar modular units

 Thickness
 0.4 m

 Porosity
 0.95 %

 Area required
 1253 m2

The underground storage will be located below the car park area

Cover required for installation below car park with occasional traffic by 2,500kg vehicle

Minimum depth to base of storage for proposed drainage network and S.W. outfalls

1.4 m

Therefore actual cover achived

1 m

Propose to store excess surface water runoff between the Q30 and Q100 flow rates for storm event with a return period greater than 1 in 30 years above ground Therefore volume of water to be stored above ground 226.5 m3

Given that car park area drained is inexcess of 1ha, the maxim,um depth of storage will be less than kerb height

